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TITLE: Method and circuit
arrangement for reducing noise in
                             digitised television
signals

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INVENTOR-INFORMATION:
NAME
  COUNTRY
SCHAMEL, GUENTER DIPL ING
  DE
KUMMEROW, THOMAS DR ING
  DE

ASSIGNEE-INFORMATION:
NAME
  COUNTRY
HERTZ INST HEINRICH
  DE

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ABSTRACT:

CHG DATE=19990617 STATUS=O> A noise
reduction of digitised television
signals should become effective even with
movements in the image content and
not perceptibly impair the image sharpness.
 An estimated-value signal for the
noise component is calculated (6) from the
difference (3) of a frame-to-frame
comparison (1, 5) and the difference (4)
between the noisy input signal (1) and
the calculated estimated-value signal (6)
is formed which supplies the
reduced-noise output signal (2) which is
stored for subsequent calculations
(5).   <IMAGE>

DOCUMENT-IDENTIFIER: US 20010055421 A1

TITLE: Method of iterative
segmentation of a digital picture

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Summary of Invention Paragraph - BSTX (12):
    [0012] Segmentation methods utilizing
watershed transformation employ as the
basis for segmentation a representation of
the color gradients in the picture,
begin segmentation in the most **homogeneous**
picture regions, and successively,
i.e. by and by, expand the segments into
more heterogeneous picture regions.
In this way **homogeneous picture** regions are
well segmentable, uniformly
heterogeneous picture regions however with
more difficulty. Simultaneous
segmentation of homogeneous and
heterogeneous picture regions, or of
picture
regions having different degrees of
heterogeneity, can be performed only with
great difficulty. In addition the method
disregards the original color
information.

Summary of Invention Paragraph - BSTX (41):

[0036] In a further preferred embodiment of the present invention if the homogeneity criterion is satisfied with the already merged picture objects as well as with the one of one and several contiguous picture objects, feature distributions of the already merged picture objects and the one of one and several contiguous picture objects are calculated and based thereon, a pertinence of the boundary picture object is determined in such a manner that the boundary picture object is allocated to the one picture object wherein a feature value of the boundary picture object occurs most frequently or that the boundary picture object is allocated to a picture object in a probabilistic manner by calculating probabilities based on a **frequency** of occurrence of the feature value of the boundary picture object in the already merged picture objects and the one of one and several contiguous picture objects.

Detail Description Paragraph - DETX (69):
[0142] The determination and exchange carried out in steps S310 and S320 can be carried out such that if the homogeneity criterion is satisfied with the already merged picture objects as well as with one of one and several contiguous picture objects, feature distributions of already merged picture objects and the one of one and several

contiguous picture objects are calculated and based thereon, a pertinence of the boundary picture object is determined in such a manner that the boundary picture object is allocated to the one picture object wherein a feature value of the boundary picture object occurs most frequently or that the boundary picture object is allocated to a picture object in a probabilistic manner by calculating probabilities based on a **frequency** of occurrence of the feature value of the boundary picture object in the already merged picture objects and the one of one and several contiguous picture objects. For example, for the feature distributions respective histograms of the features of the already merged picture objects and the one of one and several contiguous picture objects are referred to.

Detail Description Paragraph - DETX (101):

[0172] The method of the present invention achieves high flexibility, high-quality segmentation in a desired resolution, simultaneous representation of the segmentation in various degrees of resolution and in the form of a hierarchical object structure, processing of highly textured pictures, separating highly textured picture regions from more **homogeneous picture** regions, separation of picture regions even

when they present overlapping
feature ranges, processing of pictures
having any dimensionality which are, for
example, generated by a one-, two-, or
three-dimensional imaging or other
technique, and object-related admission of
specific homogeneity criteria such
that for example line structures or picture
regions having a constant color
development are also subjected to
segmentation.

Detail Description Paragraph - DETX (103):
    [0174] The method largely works in the
absence of beforehand knowledge, i.e.
in the absence of beforehand knowledge with
the exception of setting a
tolerance, and is extremely flexible with
respect to the desired picture
resolution, i.e. the average number of
picture elements per segment. The
method can be performed largely in an
automated manner, it does not require
interactive intervention. It processes
pictures or picture-type data records
of any desired dimensionality. At a given
resolution, very good segmentation
results in terms of differential diagnosis
are obtained. Identical structures
are segmented jointly and separated from
other structures. It is particularly
also suited for finding and differentiating
between textured picture objects
having overlapping feature ranges, or for
processing high-**noise** pictures.

Other than the numerous prior art methods,
the method of the present invention
does not employ pixel classification and
subsequent segmentation. Picture
elements are rather segmented based on
homogeneity criteria in such a manner
that picture structures are combined in an
expedient manner in terms of
differential diagnosis. With respect to
quality, it is superior to
segmentation methods relying on thresholds,
and it is superior to methods which
perform segmentation with respect to
particular texture features, in
flexibility of the desired resolution and
the capability of processing most
variegated textures at the same time. With
the segments thus obtained,
essentially more information is available
for a subsequent classification than
with single picture elements. The
classification probabilities thus made
possible may therefore be increased
distinctly. A maximum degree of
condensation and utilisation of the
existing information is achieved. This is
not possible with prior art methods which
employ partial ranges or
distributions defined beforehand in the
feature space and/or do not
concurrently resolve in a plurality of
planes. Differently textured objects
are clearly delimited even when they
present comparatively wide and overlapping
feature distributions.

Claims Text - CLTX (17):

    17.   The method of claim 15, wherein if the homogeneity criterion is satisfied with the already merged picture objects as well as with the one of one and several contiguous picture objects, feature distributions of the already merged picture objects and the one of one and several contiguous picture objects are calculated and based thereon, a pertinence of the boundary picture object is determined in such a manner that the boundary picture object is allocated to the one picture object wherein a feature value of the boundary picture object occurs most frequently or that the boundary picture object is allocated to a picture object in a probabilistic manner by calculating probabilities based on a **frequency** of occurrence of the feature value of the boundary picture object in the already merged picture objects and the one of one and several contiguous picture objects.